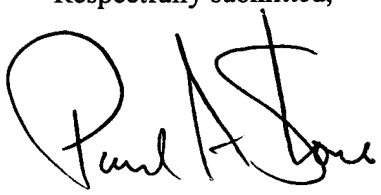
Respectfully submitted,



Date: 6-25-01

Paul A. Stone
Attorney for Applicants
Reg. No. 38,628

Symyx Technologies, Inc.
3100 Central Expressway
Santa Clara, CA 95051
(408) 773-4027

Express Mail Label No: EL418494568US
Symyx Docket No: 2000-022DIV1

PARALLEL FLOW PROCESS OPTIMIZATION REACTOR

[0001] The present invention is related to, and claims priority to co-owned, co-pending U.S. patent application Ser. No. 60/187,566 entitled "Apparatus and Methods for Multi-Variable Optimization of Reaction Systems and Other Chemical Processing Microsystems", filed March 7, 2000 by Bergh *et al.*, and to co-owned, co-pending U.S. patent application Ser. No. 60/229,984 entitled "Apparatus and Methods for Optimization of Process Variables in Reaction Systems and Other Chemical Processing Systems", filed September 2, 2001 by Bergh *et al.*

BACKGROUND OF INVENTION

[0002] The present invention generally relates to materials science research, and specifically, to combinatorial (*i.e.*, high throughput) materials science research directed toward the identification and/or optimization of new materials. The invention particularly relates, in preferred embodiments, to apparatus and methods for optimizing chemical reaction systems, such as chemical reaction systems involving heterogeneous catalysts.

[0003] In recent years, significant efforts have been extended toward developing parallel systems, such as parallel reactors, for the purpose of screening different materials, such as heterogeneous catalysts, for particular properties of interest, such as catalysis. U.S. Patent No. 5,985,356 to Schultz *et al.* discloses synthesis and screening arrays of materials in parallel for catalysis, and U.S. Patent No. 6,063,633 to Willson discloses parallel flow reactors, and parallel screening techniques (*e.g.*, thermography, chromatography, *etc.*) for evaluating catalysis. A substantial portion of such effort has, however, focussed on apparatus and methods for evaluating compositional space of the materials (*e.g.*, heterogeneous catalysts) of interest, while only a relatively small portion of such effort has been directed toward apparatus and methods for evaluating other parameter spaces – in addition to compositional space. More specifically for example, in the context of heterogeneous catalysis research, only limited attention has been focused on the development of apparatus and methods for high-throughput, parallel optimization